IN THE CLAIMS

1. (currently amended) An optical assembly comprising a laterally graded reflective multilayer having a reflecting surface to reflect incident X-rays under low incidence angles while producing a two-dimensional optical effect, said reflecting surface comprising a single surface conformed along two curvatures corresponding to two different directions;

wherein said two different directions correspond respectively to sagital and meridional directions of the incident X-rays, and said reflecting surface has a sagital curvature radius of less than 20 mm.

2. (currently amended) The optical assembly of claim 1, wherein the laterally graded reflective multilayer extends along ~~a~~ the meridional direction of the incident X-rays.

3. (previously presented) The optical assembly as claimed in claim 1 or 2, wherein the reflecting surface is smooth.

4. (previously presented) The optical assembly of claim 1, wherein the two-dimensional optical effect is obtained by a single reflection of incident rays on the optical assembly.

5. (canceled)

6. (previously presented) The optical assembly of claim 1, wherein the multilayer is a depth graded multilayer.

7. (previously presented) The optical assembly of claim 1, wherein the reflecting surface is adapted to reflect rays of Cu-K α peaks.

8. (previously presented) The optical assembly of claim 1, wherein a first one of said two curvatures defines a circle.

9. (previously presented) The optical assembly of claim 1, wherein a first one of said two curvatures defines a curve different from a circle.

10. (previously presented) The optical assembly of claim 9, wherein the first curvature defines an ellipse or a parabola.

11. (currently amended) The optical assembly <u>of </u>claim 1, wherein a first one of said two curvatures defines an open or a closed curve different from a circle, an ellipse or a parabola.

12. (previously presented) The optical assembly as in any one of claims 8, 9, 10 or 11, wherein a second one of said two curvatures defines a circle.

13. (previously presented) The optical assembly as in any one of claims 8, 9, 10 or 11, wherein a second one of said two curvatures defines a curve different from a circle.

14. (previously presented) The optical assembly of claim 13, wherein the second curvature defines an ellipse or a parabola.

15. (previously presented) The optical assembly as in any one of claims 8, 9, 10 or 11, wherein a second one of said two curvatures defines an open or a closed curve different from a circle, an ellipse or a parabola.

16. (previously presented) The optical assembly of claim 1, wherein the reflecting surface has a geometry of substantially toroidal shape.

17. (previously presented) The optical assembly of claim 1, wherein the reflecting surface has a geometry of substantially paraboloidal shape.

18. (previously presented) The optical assembly of claim 1, wherein the reflecting surface has a geometry of substantially ellipsoidal shape.

19. (previously presented) The optical assembly of claim 1, wherein the reflecting surface has a substantially circular geometry along a first direction and a substantially elliptic or parabolic geometry along a second direction.

20. (canceled)

21. (previously presented) The optical assembly of claim 1, further comprising at least one window that is opaque to X-rays, the at least one window having an aperture therein and being associated with an input or an output of the optical assembly in order to control a flux of the optical assembly.

22. (previously presented) The optical assembly of claim 21, wherein the at least one window is removable.

23. (previously presented) The optical assembly of claim 21, wherein the aperture is located at an input cross-section, and the size and the shape of said aperture can be adjusted in order to control an incident flux.

24. (previously presented) The optical assembly of claim 21, wherein the aperture is located at an output cross-section, and the size and the shape of said aperture can be adjusted in order to control a reflected flux.

25. (previously presented) The optical assembly as claimed in one of claims 21 or 22, wherein the aperture of the at least one window is dimensioned to realize a flux/divergence compromise of radiation.

26. (currently amended) A method of manufacturing an optical assembly comprising a laterally graded reflective multilayer having a reflecting surface to reflect incident X-rays under low incidence angles while producing a two-dimensional optical effect, said reflecting surface comprising a single surface conformed along two curvatures corresponding to two different directions, the method comprising:

providing a substrate having a curvature along a first direction;

coating the substrate; and

curving the substrate along a second direction different than the first direction;

wherein one of the first or second directions is a sagital direction of the incident X-rays, and the curvature of the substrate corresponding to the sagital direction defines a radius of curvature which is less than 20 mm.

27. (currently amended) The method of claim 26, wherein the first direction along which the substrate already has a curvature corresponds to ~~a~~ the sagital direction of the optical assembly.

28. (canceled)

29. (currently amended) The method as claimed in one of claims 26 or 27~~or 28~~, wherein the second direction along which the substrate is curved corresponds to a meridional direction of the optical assembly.

30. (currently amended) The method of claim 26, wherein the substrate has a roughness lower than 10 angstroms rms.

31. (previously presented) The method of claim 26, wherein providing the substrate comprises providing an element in the form of a tube, cone, or pseudo-cone already having a curvature along a direction orthogonal to the axis of the tube, of the cone or of the pseudo-cone.

32. (previously presented) The method of claim 31, wherein the element comprises a glass tube having a circular transversal cross-section.

33. (previously presented) The method of claim 32, wherein the glass is of a borosilicate glass 3.3 type.

34. (currently amended) The method ~~the~~ of claim 32, further comprising cutting the glass tube along a longitudinal direction so that the substrate has a shape of an open cylinder.

35. (previously presented) The method of claim 34, further comprising cutting in order to dimension the optical assembly in length after cutting the glass tube along the longitudinal direction.

36. (previously presented) The method of claim 26, wherein coating the substrate is performed to achieve a multilayer before curving the substrate.

37. (previously presented) The method of claim 26, wherein the substrate is curved in order to conform it to a predetermined geometry before the coating step.

38. (previously presented) The method of claim 26, further comprising coupling the optical assembly to a filter to provide attenuation of undesired spectral bands while guaranteeing sufficient transmission of a predetermined wavelength band.

39. (previously presented) The method of claim 38, wherein the filter comprises a 10-μm nickel filter.

40. (previously presented) The method of claim 38, wherein the filter is fabricated by one of:

providing a pair of filters to obtain a combined thickness corresponding to a predetermined filter thickness, a first one of the pair of filters positioned on an input window and a second one of the pair of filters being positioned on an output window of a protective housing containing the optical assembly; or

depositing a layer of filtering material on the multilayer, the layer of filtering material having a coating thickness approximately given by the following relationship:

$$d = (e \sin \Theta) / 2,$$

wherein e is a required filter optical thickness and Θ is an angle of incidence.

41. (currently amended) A device for generating and conditioning X-rays for angle-dispersive X-ray reflectometry, the device comprising:

an optical assembly comprising a laterally graded reflective multilayer having a reflecting surface to reflect incident X-rays under low incidence angles while producing a two-dimensional optical effect, said reflecting surface comprising a single surface conformed along two curvatures corresponding to two different directions, said two different directions corresponding to sagital and meridional directions of the incident X-rays, and said reflecting surface has a sagital curvature radius of less than 20 mm; and

a source of the incident X-rays coupled to the optical assembly so the incident X-rays are conditioned along two dimensions to adapt a beam emitted by the source in destination of a sample, with the X-rays having different angles of incidence on the sample.

42. (previously presented) The device of claim 41, wherein the dispersion of angle incidences on the sample corresponds substantially to an angular dispersion along a sagital dimension of the beam reflected by the optical assembly.

43. (previously presented) The device as claimed in one of claims 41 or 42, wherein the optical assembly is directed relative to the sample so that the normal in a center region of the optical assembly is approximately parallel to the surface of the sample.

44. (previously presented) The device of claim 41, wherein a capture angle at a level of the sample is greater than 2° along a first dimension corresponding to a sagital dimension of the optical assembly and about 1° along a second dimension

corresponding to a meridional dimension of the optical assembly, the optical assembly being positioned so dispersion in angles of incidence of the X-rays on the sample is greater than 2°, the sample being positioned at least 15 cm from the optical assembly.

45. (new) The optical assembly of claim 1, further comprising a substrate coated with said laterally graded reflective multilayer, said substrate having a roughness less than 10 angstroms rms.